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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO ATTENTION OF: 5SMQA

MEMORANDUM

DATE: AUG 23 1991

SUBJECT: Review of First Revision Quality Assurance Project Plan (QAPjP) for the Remedial Investigation/Feasibility Study (RI/FS) at Waukegan Manufacturing Gas and Coke Plant Site, Waukegan, Illinois.

FROM: George C. Schupp, Chief
Quality Assurance Section

TO: James Mayka, Chief
Illinois/Indiana Section

ATTENTION: Cindy Nolan, Remedial Project Manager

We have completed our review of the subject first revision QAPjP (QAS Log-In # 1575) received on July 22, 1991. The present QAPjP is not approvable since it still contains deficiencies which are detailed in this memorandum.

Our comments are as follows:

I. QUALITY ASSURANCE PROJECT PLAN

A) Project Description

Section 3.4., page 17: The sentence states that selected groundwater samples will be analyzed for low level PAHs based on results from initial analyses using CLP SOW OLM01.0. Another sentence needs to be added stating that the low level PAH analysis will be performed using the SOP "Determination of PAHs and Heterocyclics by GC/MS" in Appendix B.

B) Quality Assurance Objectives for Measurement Data in terms of Precision, Accuracy, Completeness, Representativeness, and Comparability

1) Section 5.1.2.: The second paragraph states the field duplicate frequency and calibration verification. Please add the statement that if the duplicate

measurement is not within 0.1 pH units, then the pH meter will be recalibrated.

2) The QC information for the pH meter stated in section 5.1.2. should be added to the field SOP. Please add.

C) Sampling Procedures

1) Section 6.6, page 4: The following information needs to be explained in this section:

   a) Who is supplying the sample bottles?

   b) We require that bottle blanks be prepared and tested for all bottles used in the sampling process. Please provide the procedures which will be used to ensure that all bottle types meet EPA specifications. **NOTE:** This will require that a sample numbering system for bottle blanks be established.

2) Section 6.6, page 4: The sentence states "For inorganic wet chemistry and some soil cations (NOTE: define what "soil cations" are and list them), the laboratory provides an in-house quality control check on 1% of all of these bottles.". Please describe in this section what is done for these quality control checks.

NOTE: Comments 1 and 2 above have not been addressed from the previous memo. A lot certificate of analysis is not acceptable as confirmation of clean bottles. An SOP which states the laboratory testing to be done to certify the bottle as clean needs to be provided.

3) Table 6.6-1 needs to be revised as follows: Please add the holding time, container, and minimum volume requirements for soil analysis (TOC, Flash point). (Comment I.B.4.j. of 2/21/91 memo)

D) Analytical Procedures

1) Please provide the following SOPs: Total Organic Carbon and Flash point. U.S. EPA reserves the right to comment further on these SOPs. (Comment H1 of 2/21/91 memo)

2) Section 9.2., second sentence: Delete this sentence. The non-CLP analytical procedures appear in Appendix B (as stated in the last sentence of this paragraph).

E) QA Reports to Management

Please state the frequency of the QA reports (monthly, biweekly, etc.). This comment has not been completely addressed. Progress reports should be provided on a monthly basis. Please add.

F) Tables

1) Table 3.4-4 is not the most current CRQL list (from CLP SOW Document OLM01.1. The tables in this section should be deleted and the tables attached to this memorandum should be used in their place.

2) Table 3.4-5: The quantitation limit for Benzo(b,k)fluoranthene in water should be 0.01 µg/L. Please correct.

3) Table 3.1-1: Footnote (1) should be revised to eliminate phenols. Change "phenols" to "acid extractables".

II. FIELD SAMPLING PLAN

A) Section 3.4.1. (page 3-10) states that the full scan compounds will be analyzed. The "full scan" defined here specifies only arsenic and cyanide from the TAL list. However, Table 3.1-1 of the FSP (and Table 3.5-2 of the QAPjP) define full scan as "Metals" or TAL inorganics. Correct this discrepancy by clarifying the tables to define when "full scan" means arsenic and cyanide or all TAL analytes.

B) Section 3.9.2.: Please provide an example of a groundwater sample number to be used in the project. (Comment II.B.9. of 2/21/91 memo).

C) Section 3.9.2.: Please provide a sample numbering scheme for the trip blanks to be used in this project. (Comment II.B.10. of 2/21/91 memo).

D) Attachment 2: Please provide the stepwise procedures for the laboratory chain of custody (from sample receipt through sample disposal). (Comment II.D.2.- Att. 2 of 2/21/91 memo)

E) Attachment 5a (SOP for Calibration and Operation of the pH Meter):

1) Please describe how often (i.e. every ten

samples, etc.) the pH meter will be checked to ensure it is still calibrated properly and the frequency of duplicate sample measurements. NOTE: See QAPjP comments B1 and B2 above. (Comment II.D.5. of 2/21/91 memo)

2) The SOP states the calibration will be checked midday but the QAPjP states this will be done every five samples. Please reconcile.

F) Attachment 5b (SOP for Calibration and Operation of the Conductivity Meter): Please provide the concentration and composition of the conductivity standard to be used to calibrate the instrument. (Comment II.D.6- Att. 5 of 2/21/91 memo)

III. **APPENDIX A: BARR STANDARD OPERATING PROCEDURES**

SOP for Calibration and Operation of the pH Meter: Please describe how often (e.g. every five samples, etc.) the pH meter will be checked to ensure it is still calibrated properly and the frequency of duplicate sample measurements. NOTE: See QAPjP comments B1 and B2 above. (Comment II.D.5. of 2/21/91 memo)

IV. **APPENDIX B: LABORATORY PROCEDURES**

1) Please submit the TOC and Flashpoint SOPs for review.

2) SOP for PAHs:

a) Section 1.0.: Please add the working linear range for this method. (Comment III.2.b of 2/21/91 memo)

b) Section 1.0 states a final volume of 50 μL but Section 7.12 specifies 500 μL. Please clarify this discrepancy by changing either the 50μL stated in section 1.0 or the 1.0 mL stated in section 7.12. (Comment III.2.i of 2/21/91 memo)

c) Sections 6.1, 6.2, and 6.2.2.: Please provide the detailed preparation (x mL in y volumetric to give z concentration) for all stock, intermediate and working standards as well as matrix spike preparations.

d) Section 6.2.3.: The stock internal standard preparation needs to be detailed in this section (see c above).

e) Section 12.5.: Provide the current surrogate recovery control limits for this procedure.

f) Section 6.2.3.: This paragraph states the internal standard will be added to the 1.0 mL extract prior to the final concentration. This is not specified in the sample extraction section (section 7.0). Please add a sentence in section 7.0 when this step will be done in the procedure.

3) SOP for BETX:

a) Section 6.2.1., first paragraph: The initial stock solution preparations for TBME and each xylene must be described in detail (x mL in y volumetric to give z concentration). Please add.

b) Section 6.2.1., second paragraph: The preparation of the 20 ppb standard has been described. Please provide this level of detail for the 5, 40, 100, and 200 ppb concentrations.

c) Section 6.2.1., second paragraph: This section states that 10 µL of the surrogate/internal standard is added. Please state the final concentration of the surrogate/ internal standard in the working standards and samples.

d) Section 6.3.: The preparation of the internal standard and surrogate compounds has not been described. Please describe the preparation of these compounds from their "neat" material. If intermediate stock solutions need to be made, they should be described in the same level of detail (x mL in y volumetric to give z concentration).

e) Section 8.4.1.: See comment d above.

f) Section 9.3.: An optional 25 mL aliquot is mentioned. If the same volume of surrogate is added to the 25 mL sample as 5 mL sample, the concentration of the surrogate will change and the concentration may not be on the standard curve. Please indicate the volume of surrogate to be added to the 25 mL sample to keep the 50 ppb concentration for both aliquots.

g) Section 8.3.1.: See comment f above.

h) Section 7.1.: Continuing calibrations are run every 12 hours. Please change the "24" to "12".

i) Section 9.4.1.,page 17: This section states that an appropriate amount of internal standard and surrogate should be spiked. This should be clarified to state the amounts of surrogate needed for the 5 mL and 25 mL samples stated previously in the SOP. Please correct.

j) Section 6.2.1.: TBME is mentioned in this paragraph. What does TBME stand for? Please clarify.

4) SOP for COD: This is a new procedure which appears to be more of a generic method (i.e. this method specifies a high range and low range standard) than the previous method. Delete this SOP and modify the previous one based on the comments from the 2/21/91 memo (which appear below:

a) Instrument detection limits for each analyte.

b) Working linear range for the method.

c) State the composition and concentration of the QC check sample and the current recovery control limit.

d) Describe the standard preparations for this method in detail (x mL in y volumetric to give z concentration). Please add.

5) SOP for Oil and Grease:

a) Section 6.2.d.3: Supply the working standard concentrations and preparations (in detail) for the ranges listed in section 6.3.3.1.

Please have the RPM forward this memo to the contractor immediately. For the next revision, submit only those pages which need to be corrected. If you have any questions regarding this report, please feel free to contact Mike DeRosa, of my staff, at 353-5966.

ATTACHMENT

TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)

Pesticides/Aroclors	CAS Number	Quantitation Limits* Water ug/L	Soil ug/Kg	On Column (pg)
98. alpha-BHC	319-84-6	0.05	1.7	5
99. beta-BHC	319-85-7	0.05	1.7	5
100. delta-BHC	319-86-8	0.05	1.7	5
101. gamma-BHC (Lindane)	58-89-9	0.05	1.7	5
102. Heptachlor	76-44-8	0.05	1.7	5
103. Aldrin	309-00-2	0.05	1.7	5
104. Heptachlor epoxide	1024-57-3	0.05	1.7	5
105. Endosulfan I	959-98-8	0.05	1.7	5
106. Dieldrin	60-57-1	0.10	3.3	10
107. 4,4'-DDE	72-55-9	0.10	3.3	10
108. Endrin	72-20-8	0.10	3.3	10
109. Endosulfan II	33213-65-9	0.10	3.3	10
110. 4,4'-DDD	72-54-8	0.10	3.3	10
111. Endosulfan sulfate	1031-07-8	0.10	3.3	10
112. 4,4'-DDT	50-29-3	0.10	3.3	10
113. Methoxychlor	72-43-5	0.50	17.0	50
114. Endrin ketone	53494-70-5	0.10	3.3	10
115. Endrin aldehyde	7421-36-3	0.10	3.3	10
116. alpha-Chlordane	5103-71-9	0.05	1.7	5
117. gamma-Chlordane	5103-74-2	0.05	1.7	5
118. Toxaphene	8001-35-2	5.0	170.0	500
119. Aroclor-1016	12674-11-2	1.0	33.0	100
120. Aroclor-1221	11104-28-2	2.0	67.0	200
121. Aroclor-1232	11141-16-5	1.0	33.0	100
122. Aroclor-1242	53469-21-9	1.0	33.0	100
123. Aroclor-1248	12672-29-6	1.0	33.0	100
124. Aroclor-1254	11097-69-1	1.0	33.0	100
125. Aroclor-1260	11096-82-5	1.0	33.0	100

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of Pesticides/Aroclors.

(continued)

Semivolatiles	CAS Number	Quantitation Limits* Water ug/L	Low Soil ug/Kg	[illegible] Soil ug/Kg	
69. Dibenzofuran	132-64-9	10	330	10000	(20)
70. 2,4-Dinitrotoluene	121-14-2	10	330	10000	(20)
71. Diethylphthalate	84-66-2	10	330	10000	(20)
72. 4-Chlorophenyl-phenyl ether	7005-72-3	10	330	10000	(20)
73. Fluorene	86-73-7	10	330	10000	(20)
74. 4-Nitroaniline	100-01-6	25	800	25000	(50)
75. 4,6-Dinitro-2-methylphenol	534-52-1	25	800	25000	(50)
76. N-nitrosodiphenylamine	86-30-6	10	330	10000	(20)
77. 4-Bromophenyl-phenylether	101-55-3	10	330	10000	(20)
78. Hexachlorobenzene	118-74-1	10	330	10000	(20)
79. Pentachlorophenol	87-86-5	25	800	25000	(50)
80. Phenanthrene	85-01-8	10	330	10000	(20)
81. Anthracene	120-12-7	10	330	10000	(20)
82. Carbazole	86-74-8	10	330	10000	(20)
83. Di-n-butylphthalate	84-74-2	10	330	10000	(20)
84. Fluoranthene	206-44-0	10	330	10000	(20)
85. Pyrene	129-00-0	10	330	10000	(20)
86. Butylbenzylphthalate	85-68-7	10	330	10000	(20)
87. 3,3'-Dichlorobenzidine	91-94-1	10	330	10000	(20)
88. Benzo(a)anthracene	56-55-3	10	330	10000	(20)
89. Chrysene	218-01-9	10	330	10000	(20)
90. bis(2-Ethylhexyl)phthalate	117-81-7	10	330	10000	(20)
91. Di-n-octylphthalate	117-84-0	10	330	10000	(20)
92. Benzo(b)fluoranthene	205-99-2	10	330	10000	(20)
93. Benzo(k)fluoranthene	207-08-9	10	330	10000	(20)
94. Benzo(a)pyrene	50-32-8	10	330	10000	(20)
95. Indeno(1,2,3-cd)pyrene	193-39-5	10	330	10000	(20)
96. Dibenz(a,h)anthracene	53-70-3	10	330	10000	(20)
97. Benzo(g,h,i)perylene	191-24-2	10	330	10000	(20)

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)

Semivolatiles	CAS Number	Quantitation Limits* Water ug/L	Low Soil ug/Kg	Med. Soil ug/Kg	On Column (ng)	
34. Phenol	108-95-2	10	330	10000	(20)	
35. bis(2-Chloroethyl) ether	111-44-4	10	330	10000	(20)	
36. 2-Chlorophenol	95-57-8	10	330	10000	(20)	
37. 1,3-Dichlorobenzene	541-73-1	10	330	10000	(20)	
38. 1,4-Dichlorobenzene	106-46-7	10	330	10000	(20)	
39. 1,2-Dichlorobenzene	95-50-1	10	330	10000	(20)	
40. 2-Methylphenol	95-48-7	10	330	10000	(20)	
41. 2,2'-oxybis (1-Chloropropane)#	108-60-1	10	330	10000	(20)	
42. 4-Methylphenol	106-44-5	10	330	10000	(20)	
43. N-Nitroso-di-n-propylamine	621-64-7	10	330	10000	(20)	
44. Hexachloroethane	67-72-1	10	330	10000	(20)	
45. Nitrobenzene	98-95-3	10	330	10000	(20)	
46. Isophorone	78-59-1	10	330	10000	(20)	
47. 2-Nitrophenol	88-75-5	10	330	10000	(20)	
48. 2,4-Dimethylphenol	105-67-9	10	330	10000	(20)	
49. bis(2-Chloroethoxy) methane	111-91-1	10	330	10000	(20)	
50 2,4-Dichlorophenol	120-83-2	10	330	10000	(20)	
51. 1,2,4-Trichlorobenzene	120-82-1	10	330	10000	(20)	
52. Naphthalene	91-20-3	10	330	10000	(20)	
53. 4-Chloroaniline	106-47-8	10	330	10000	(20)	
54. Hexachlorobutadiene	87-68-3	10	330	10000	(20)	
55. 4-Chloro-3-methylphenol	59-50-7	10	330	10000	(20)	
56. 2-Methylnaphthalene	91-57-6	10	330	10000	(20)	
57. Hexachlorocyclopentadiene	77-47-4	10	330	10000	(20)	
58. 2,4,6-Trichlorophenol	88-06-2	10	330	10000	(20)	
59. 2,4,5-Trichlorophenol	95-95-4	25	830	25000	(50)	I
60. 2-Chloronaphthalene	91-58-7	10	330	10000	(20)	
61. 2-Nitroaniline	88-74-4	25	830	25000	(50)	I
62. Dimethylphthalate	131-11-3	10	330	10000	(20)	
63. Acenaphthylene	208-96-8	10	330	10000	(20)	
64. 2,6-Dinitrotoluene	606-20-2	10	330	10000	(20)	
65. 3-Nitroaniline	99-09-2	25	830	25000	(50)	I
66. Acenaphthene	83-32-9	10	330	10000	(20)	
67. 2,4-Dinitrophenol	51-28-5	25	830	25000	(50)	I
68. 4-Nitrophenol	100-02-7	25	830	25000	(50)	I

Previously known by the name bis(2-Chloroisopropyl) ether